DETAILED ACTION

Request for Continued Examination

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/23/2010 has been entered.

Status of Application/Amendment/Claims

Applicant's response 01/25/2010 has been considered. Rejections and/or objections not reiterated from the previous office action mailed 11/25/2009 are hereby withdrawn. The following rejections and/or objections are either newly applied or are reiterated and are the only rejections and/or objections presently applied to the instant application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. With entry of the amendment filed on 01/25/2010, claims 1-7 are pending and currently under examination in the application.

New Claim Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Claims 1-7 are drawn to a recombinant vector for expression of a siRNA or miRNA comprising the structure as in claim 1 wherein "the residues at the 3' end protrude...wherein X and Y are optionally present and if present X and Y are one or more nucleotides that are complementary."

The specification, on pages 1-4, discloses sequences for transcribing the pre-siRNA as claimed wherein the structures have UU 3' protruding ends or complementary ends or a 3' end as shown in line 25 on page 3. The specification does not contemplate the instantly claimed structure wherein the sequence has any sequence of X and Y and if X and Y are optionally present, they consist of one or more nucleotides that are complementary. If Applicant believes that such support is present in the specification and claimed priority documents, Applicant should point, with particularity, to where such support is to be found.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims as amended are drawn to a recombinant vector for expression of a siRNA or miRNA comprising the structure as in claim 1 wherein "the residues at the 3' end protrude...wherein X and Y are optionally present and if present X and Y are one or more nucleotides that are complementary."

The claims are indefinite because step c requires the sequence to have residues at the 3' end that protrude which would be X as shown in the structure however the limitations of step c further state that X and Y are one or more nucleotides that are complementary. It is unclear how the structure can have residues at the 3' end that protrude and also have the ends complementary when X and Y are present.

Claims 3 and 4 are indefinite and fails to further limit claim 1 because from the structure shown in claims 3 and 4, it is unclear which nucleotides are now X and Y if they are present in the structure and if they are present, it is further unclear with respect to claim 4 which nucleotides are complementary.

Response to Applicant's Arguments

Re: Claim Rejections - 35 USC § 103 - maintained

The rejection of claims 1-7 under 35 U.S.C. 103(a) as being unpatentable over Kreutzer et al. (US 20040001811 of record cited on PTO 892 mailed 08/18/2008),

Elbashir et al. (Methods 2002, Vol. 26: 199-213 of record cited on PTO 892 mailed 08/18/2008), Nilsen et al. (US Patent No. 6013447), De Young et al. (Biochemistry 1994, cited in IDS filed 11/20/2008), Hernandez (EMBO 1985, Vol. 4, No. 7: 1827-1837 of record cited on PTO 892 mailed 08/18/2008) and Skuzeski et al. (JBC 1984, Vol. 259, NO. 13: 8345-8352 of record cited on PTO 892 mailed 08/18/2008) is maintained for the reasons of record.

Applicant's arguments filed 01/25/2010 have been fully considered but are not persuasive. Applicant acknowledges that Kreutzer et al. teach a vector for expression of a dsRNA wherein the siRNA is transcribed by promoter and expressed as an inverted repeat joined by a linker polynucleotide such that the siRNA has a stem and loop structure and teach the use several types of promoters including U1 snRNA pol II promoters. However Applicant submits that the ssRNAs used in the Examples were prepared by conventional oligonucleotide synthesis as the products taught by Elbashir et al. and neither of the two references provide vectors for expressing siRNA and although Nilsen et al., DeYoung et al., Hernandez et al. and Skuzeki et al. disclose expression vectors, none of those vectors express a siRNA or miRNA. Thus there would not have been a reasonable expectation of success at transcribing the claimed siRNA. Further Applicant argues none of the cited references teach a product with additional nucleotides at the 3' end and optionally 5' end as claimed.

These arguments are not convincing. Regarding the arguments against Kreutzer et al., a reference is relied upon for all that it teaches. Kreutzer et al. teach dsRNA can be expressed from an expression vector wherein the siRNA is transcribed by promoter

and expressed as an inverted repeat joined by a linker polynucleotide such that the siRNA has a stem and loop structure and teach the use several types of promoters including U1 snRNA pol II promoters. While Kreutzer et al. demonstrates in the Examples synthesis of molecules having two 3' and 5' ends, Kreutzer et al. clearly teach the use of a vector for transcribing a siRNA comprising a single strand having a loop as claimed.

While it is true that none of the documents teach a specific embodiment of an expression vector comprising a U1 promoter that expresses a siRNA or miRNA as instantly claimed, the references in combination teach that it would have been obvious to one of ordinary skill in the art to make an expression vector capable of expressing a siRNA wherein the siRNA comprises 3' overhangs and a U1 promoter as taught by Elbashir et al. and Kreutzer et al. and that it would have further been obvious to incorporate the elements taught by Nilsen et al. and Hernandez, such as the 3' end termination sequence and further to clone the U1 snRNA promoter into the expression vector using a Bgl II restriction site for the reasons taught by Skuzeski et al. One of ordinary skill in art would have expected to be able to incorporate nucleic acid sequences for expression of a siRNA as claimed given the prior art cited teaches the expression vectors for expression of nucleic acid sequences. Nothing in the prior art references would preclude the skilled worker from using the expression vectors for siRNA sequences particularly given Nilsen et al. teach the use of expression vectors for the expression of similar small inhibitory nucleic acid RNAs as claimed.

With regard to Applicant's argument that none of the cited references teach a product with additional nucleotides at the 3' end and optionally 5' end as claimed, this argument is not persuasive. The amendment to claim 1 recites the limitation wherein the X and Y are optionally present, therefore claim 1 does not require X and Y as without these nucleotides, the structure only has U overhang which would have been obvious in view of at lest Kreutzer et al. and Elbashir et al. as argued previously. The amended claims do not recite the structure has a optional 5' overhang so Applicant's argument regarding this limitation is unclear. With respect to the remaining structures in claims 3, 4, 5 and 10, these structures are obvious for at least the reasons presented in the previous rejection of record.

Lastly, none of the advantages of the claimed expression vector as argued by Applicant in the last two paragraphs on page 8 of the remarks is cited in the instant claims and therefore do not need to be taught by the prior art references.

Thus, the rejection is maintained for the reasons stated above and of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly Chong whose telephone number is 571-272-3111. The examiner can normally be reached Monday thru Friday between 7-4 pm.

If attempts to reach the examiner by telephone are unsuccessful please contact Fereydoun Sajjadi at 571-272-3311. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Kimberly Chong/
Primary Examiner
Art Unit 1635